PORTLAND CEMENT.

THE FAILURE ON CORNHILL.

We have taken some pains to learn if the recent failure should weaken our opinion of the material in question, or throw any slur upon the manufacturer of that particular specimen, and are disposed to think it should do neither. It appears to have resulted from a departure from the usual mode of manufacture, made with a view to meet a wish on the part of plasterers to have a cement that would set fast, and not occupy much time in working.

Portland is an artificial cement, composed of chalk and clay in certain proportions; which ingredients being ground together in water are run into a reservoir, where they are allowed partially to dry. After being further dried by stove heat, the mixture is ultimately burnt in kilns, from which it is delivered in two conditions, viz. perfectly burnt and not perfectly burnt. The proper admixture of these two qualities of the cement mainly affects its nature; and it appears that in the specimen under notice, too much of the unburnt, or quick setting part, was introduced.

Portland cement differs from what was used some time ago as "Frost's cement" only in the proportions of the materials employed and the manipulation,—upon which, indeed, its goodness or otherwise entirely depends.

General Pasley in his work on limes and cements, when speaking of Frost's cement, objects to the washing and long drying practised, as both very prejudicial to the strength of the cement. He further thought that the chalk predominated too much over the clay, and recommended certain proportions of his own. Whether or not the Portland cement more nearly approximates these than Frost's we may take an opportunity to investigate.

PUDDLE.

Sir,—Your correspondent in seeking information respecting puddling, omitted to mention the depth of the proposed reservoir, as upon that would depend the strength or thickness of the puddled wall.

To render the dam head water-tight, a puddled wall should be carried up at the back of the masonry, and in connection with the puddled lining of the reservoir, in a similar manner to which the side walls of docks are rendered impervious to water, and from two to three feet thick, or more, according to the altitude; and the puddling should proceed in courses as the masonry proceeds. The interior slope also from the dam-head, I would recommend to be lined with puddle, as an additional security. The roots of trees should be carefully grubbed up before the puddled lining is laid, or otherwise they may shoot and penetrate through it, and allow the water to escape. Some judgment is requisite in the selection of proper materials for the construction of a puddle, for instance, neither sand, granite, nor chalk would separately form a puddle, but all or either of them mixed with even a small proportion of clay, and well wrought, may be made into an excellent puddle.

It was formerly contended that clay alone was the most suitable material, but modern practice has discovered that clay mixed with a small proportion of sand, gravel, or chalk, or a compound of all these, constitutes the best puddle. Some persons use common mould, wood or coal ash, brickdust, &c., and this mixed with clay, when sand or gravel cannot be procured, will make a durable lining for water works.

Clay of a soft or soapy nature is very apt to slip; and if too stiff and hard is wrought with difficulty, and is very liable to crack afterwards by exposure to the atmosphere. Mr. Telford (the late eminent engineer), in describing puddle, says: "It is formed by wetting earth to fluidity in an inclosed space, and then turning and working it with a shovel, until it has acquired that alluvial state which experience has shown to be requisite; it is then left to settle; and when the water has been evaporated from the sediment, a similar stratum of alluvial earth is superadded from time to time, and thus rises with the canal banks, in which it forms a concealed wall of earth, impermeable by water; in effect it prevents leakages through a canal bank, or any dam or other earthwork which requires that kind of precaution." I cannot close this article without adding extracts from the specifications of two of our most eminent hydraulic engineers, the late Mr. Telford and Mr. Walker, in allusion to this subject. The former says: "The whole of the puddles are to be composed of a proper mixture of clay and sand, or gravel, not exceeding the proportion of one of the latter to three of the former (unless the engineer shall direct to the contrary), to be thoroughly worked by cutting and heading in courses not exceeding eight inches thick when laid on, so as to be, when completed, perfectly water-tight, and all joinings must be carefully united."

The latter says: "The canal in excavation, when not in clay, is to be lined with a two-feet thickness of puddle, as shewn on the cross section. In the embankments, when not in clay, the bottom of the canal is likewise to be lined with a three-feet thickness of puddle, meeting that at the sides, as shewn in the cross section. When in clay, side puddles are to be made one yard in thickness, carried up from the clay, the surface of which is to be first turned over to the depth of ten inches, and perfectly worked. Hoping these remarks may prove satisfactory to your correspondent,

I am, Sir, &c., B. Bayliss.

Merthyr Tydfil, Sept. 7, 1846.

FOREIGN ARCHITECTURAL AND COLLATERAL INTELLIGENCE.

Berlin.—Amongst the latest establishments of that city, the *Polytechnic Society* occupies a prominent place. It contains now 800 regular paying members (a great number for a city of merely 300,000 people). They applied for a site to erect a building of their own, first to government, and a fine plot in the Thiergarten, near the Brandenburg Archway, was fixed upon. Some impediments, however, having come across, another site, near the Royal Building School (*Konigliche Bau Schule*), in the very centre of the town, has been selected. Its price, however, is considerable—80,000 dollars; and as the society intend, hereafter, to establish an especial Polytechnic school (what we would call *college*), an aggregate capital of 200,000 dollars will be required.

The new hôtel of the Secretary of War, which, like a princely mansion, is raising in Leipzig-street, will be ornamented with a number of brass statues, representing the different *corps* of the Prussian army. In fact, the number of statues in Berlin—be they of metal, stone, or even stone-cement—is so much augmenting, that it can be said of the Prussian capital now, what Cassiodorus said of Rome of the Emperors, viz. that "it contained two kinds of personages nearly equally numerous—living beings and statues."

"François de Hollande"—a hitherto unknown Architectural Author.—Count Raczynski, of Berlin, previously known by his writings on modern art, has, on searching the library of the Jesuits at Lisbon, discovered the MSS. of the above artist, a contemporary and friend of Michael Angelo and other great men of that period. F. de Hollande is called in these MSS. *architecte et eulumineur*. Amongst them is a dialogue which took place at Rome between F. de Hollande, Michael Angelo, Victoria de Colonna, and other celebrated personages of the time. Another very curious work is an official report made to King Sebastian "On the utility of the art of design in a Christian republic, as well in time of peace as in war." The following passage, extracted from a chapter—on the utility of design to a monarch, might nigh induce us to believe, that F. de Hollande had some glimpses of the discoveries of Lavater and Gall even in the 16th century. "One of the reasons why the king ought to know to draw, is, that thereby he will become aware of the character of the persons he has to employ, as exhibited in their physiognomy. This will enable him—a thing, certainly, very useful and important—to distinguish in his council, according to their features, the men whom he has to choose as viceroy of India, or for an ambassador, &c. He will also thereby avoid the making a man a captain, who is but suited for a groom." Count Raczynski has travelled over the whole of Portugal in an artistic point of view, viewed all their important sites and monuments, and states, that "the love of the *beautiful* and the taste for arts have been spread, at different epochs, throughout the whole of the realm."

Engineer, Mr. G. Potenti, of Pistoja.—This gentleman, a professor in a small Roman town, has raised himself to great celebrity as a railway *mapper* and writer. After three years' travels through Europe, Mr. P. has just completed "Mappe routière historique et statistique des chemins der fer, et autres voies de communication exploitées à vapeur, du milieu de l'Europe."* It contains—all railways completed, building, or projected; all courses of steam-boats, with their periods of arrival at the sea, or rivers and lakes; an account of steam-engines of the atmospheric system, of lines and rails. The map contains, moreover, several very interesting tables, viz.:—a comparative review of all lines all over the world in 1845; a survey of the most important rail systems in Europe; a survey of the ascent and fall on European and North American railways; a table on the gradual improvement of steam-engines since 1825, in regard of their power, speed, and amount of fuel used, &c.; a survey of the smallest radii of the average bent of lines; a table on the average speed of trains—a comparative table, in fine, of the most general geographical and railway measures.

Curious Sepulchre.—Count Sternberg, the celebrated German geologist, has ordered in his last will, that his body shall be inclosed in the hollowed-out trunk of one of those gigantic antediluvian palm-trees, which have assumed the hardness of the most compact sandstone. We are not aware, whether his desire has been already carried into effect.

Prague, Austria.—The corporation of this ancient city have restored the venerable chapel of St. Mary, adjoining the *Teyn* church, and placed therein the statues of Cyrillus and Methodius (Bohemian apostles), made by Mr. Marx of Tuscan marble. They are sterling, well executed pieces of statuary. The pedestal, of Gothic style, is made of red Bohemian marble, after the designs of Architect Mr. Herrmann. In it a bronze tablet will be sunk, representing deeds of the life of the above two saints. The chapel contains many works of the fifteenth and sixteenth centuries, as a metal font of the year 1414, also properly restored now. A Gothic altar, made after the designs of Mr. Hellich, will be adorned with a carved in wood and gilt statue of the Madonna of the fifteenth century. The next improvement to be made in Teyn church, by order of the Prague corporation, is the restoration of a very remarkable pulpit; that of an altar of St. Luke; the lifting from out of the ground of several interesting old obituary tablets, &c. On the chief altar will be placed the remarkable old wood crucifix, described by Professor Wach in his history of Bohemian wood carving.

Count Giovanelli, Lord Mayor of Trento.—The death of this patriotic citizen (Jan. 1846) is much lamented throughout Tyrol. After having occupied the above situation for several years, he eventually succeeded in making that dismal, dark place of the once council, resemble a clean and cheerful Dutch city. The aqueducts, constructed by his suggestions, pour an abundance of water out of marble troughs. Where once large spaces of rubbish and sand were to be met with, smiling greens with plantations of trees are to be seen. In the same way Mr. Giovanelli reformed the paving to a great degree of symmetry and solidity, built public slaughter-houses, erected a new town-hall, perfectly cleansed and regulated the Place before the cathedral; and even the Campo Santo of Trent, with its Doric columns, is his work. J. L.

Chelmsford Church.—A Chelmsford paper, quoting, it now appears, from the *Essex Herald*, a paragraph relative to "the old church in this place," has led to the mistaken idea that the roof of Chelmsford Church has fallen into a state of decay, whereas the paragraph related to Halstead old church, the church at Chelmsford having "never been in a more substantial or better state" than at present. We are indebted to the *Essex Herald* for the correction of this error.

* Brussels, Vandermaelen. The same publisher has also brought out another work of Professor Potenti, on the Belgian lines, both to be had of any foreign publisher in London.

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